

植物保护

根际细菌 *Serratia plymuthica* HRO-C48 的生防作用初探

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摘要 沙雷氏菌 *Serratia plymuthica* HRO-C48 分离自油菜根际, 是一种产几丁质酶和 IAA 的植物根际促生细菌。离体抑菌活性测定表明, 菌株 HRO-C48 具有广谱抗真菌活性。与 12 种测试的植物病原真菌平板对峙培养, 产生大小不同的抑菌圈, 说明可能通过产生抗生素抑制真菌生长。温室盆栽试验中, 用 HRO-C48 菌悬液对番茄进行浸种和灌根处理, 该菌在番茄植株根际能大量定殖, 4 周后根表和根际土壤中的菌量仍稳定在 1.0×10^6 cfu/g 水平。在温室条件下, 菌株 HRO-C48 可有效防治黄瓜猝倒病, 防治效果达 49.57%; 还能诱导番茄叶片对灰霉病的系统抗性, 诱抗效果达 44.45%。综合以上结果, 说明菌株 HRO-C48 的生防作用可能依赖于抗生、溶菌、根际竞争、促生和诱导抗性等多种机制的组合。

关键词 [Serratia plymuthica](#) [根际定殖](#) [生物防治](#) [诱导系统抗病性](#) [猝倒病](#) [灰霉病](#)

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Preliminary Study on Biocontrol Potential of Rhizobacterium *Serratia plymuthica* HRO-C48

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Abstract

Serratia plymuthica HRO-C48 with chitinolytic activity was isolated from the rhizosphere of oilseed rape in Germany and promoted plant growth by production of indole acic acid (IAA). Confrontation bioassay of antifungal activity on PDA plates showed that strain HRO-C48 suppressed a broad spectrum of phytopathogenic fungi and formed different size of inhibition zone in dual culture with 12 fungi. Under greenhouse experiments, strain HRO-C48 successfully colonized tomato rhizosphere and kept a stable population at concentration of 1.0×10^6 cfu/g after soaking seeds and pouring root with HRO-C48 suspension up to 4 weeks. The treatment with HRO-C48 can reduced disease incidence of cucumber damping-off, as well as induced systemic resistance to tomato grey mold compared with tip water as control. Together, all these data revealed that combination of multiple mechanisms, such as antibiosis, lysis, rhizosphere competition, as well as plant growth promoting and induced systemic resistance might be responsible for biocontrol activity of HRO-C48.

Key words [Serratia plymuthica](#) [rhizosphere colonization](#) [biocontrol](#) [induced systemic resistance](#) [damping-off](#) [grey mold](#)

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